

University of Dundee

## MASTER OF SCIENCE

Designing Appropriately for Optimum Environments to Care for Dementia/Alzheimer's Residents

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*Award date:*  
2021

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I, Ziyue Tao, hereby declare that I have written this thesis, and I have conducted the research presented and summarised within. The work is original and has not been previously accepted for a degree. This research was conducted as part of my **MDes (by Research)** degree at the University of Dundee, between October 2020 and 31 August 2021.

Signed\_\_\_\_\_

Date\_\_16 September 2021\_\_

## **Ziyue Tao- Master's Research**

Title: ***Designing Appropriately for Optimum Environments to Care for Dementia/Alzheimer's Residents***

This year I was working on a Community Social Centre for a group of dementia patients who live in an adjacent complex of care homes. The research was wide and varied: I looked at how serious this problem is and the scale of the problem. There are only 4 care homes in Chongqing! Families are often unable to care for their Alzheimer's family member. And many people cannot afford specialist care, which is scarce and expensive. I designed the social and treatment aspects in year of work, with architectural plans, interiors and exteriors, and site plans.

### **Introduction and Context:**

According to the World Health Organization, dementia is now the fifth largest killer in the world, although dementia is the number one killer in some wealthier countries. Globally, 50 million people suffer from this disease, but due to an aging population, this number is expected to increase to 130 by 2050 million. The 2020 dementia study on Chinese people over 60 years old shows that there are approximately 15.07 million people with dementia among Chinese people aged 60 and over. Among the elderly over 85 years old, 1/3 suffer from dementia. The study found that 9 kinds of changeable risk factors, including living environment, education level, marital status, smoking, high blood pressure, hyperlipidemia, diabetes, heart disease, cerebrovascular disease. If these risk factors can be controlled, the incidence of dementia will be greatly reduced, along with the overall prevalence of dementia and its associated mild cognitive impairment. Improving the management of patients with dementia, optimizing the dementia care system, and increasing public awareness of dementia and mild cognitive impairment are issues that need to be resolved urgently. Therefore, my research question is how to design the indoor public areas of nursing homes for patients with dementia in China.

As my work is leading to PhD research, I will continue to study this topic after a second Master's degree:

### **Research Questions/ Hypothesis:**

- How can interior and environmental design be responsive to the needs of Alzheimers' patients?
- Is there any way that designing a safe and carefully responsive environment might actually delay the full symptoms of memory loss if an individual is placed in a safe but stimulating environment, free from stress?
- Are there any cultural cues that are meaningful to Chinese Alzheimers residents that a specially-designed care home might be able to design for?
- How to retain the elderly through interior design and reduce the number of people with Alzheimer's disease who are missing?

- Is it possible to design a type of space suitable for family members to accompany patients with late-stage Alzheimer's disease for communication activities?

### **Aims and objectives of the research:**

The subjects of the study are Chinese elderly and Alzheimer's patients. Through the study of the life and treatment methods of these subjects, and the nature of memory loss and how it affects behavior, the indoor functions they need will be studied and planned. The objective is to alleviate the patient's condition as much as possible through interior space design, and if it can be achieved, to slow the progress of the disease through carefully considered and designed aspects of their care environment.

### **Research Context:**

Developed countries ushered in the aging of the population earlier than China. Their research on the housing problem of the elderly has reached a more in-depth stage, and they have accumulated a lot of design experience. At the same time, they are also very concerned about basic research on Alzheimer's disease. During the postgraduate period, I have some basic research and simulation design for the public space design of Alzheimer's disease. The following two cases are classic cases of nursing homes for Alzheimer's disease in Europe and the United States. For example, the Hogewey Alzheimer's Care Home in the Netherlands uses environmental measures to reduce the cognitive and behavioral problems of Alzheimer's patients to improve their quality of life. The Waffney Center in the United States is designed as a home-like living place, which can provide patients with an opportunity to live safely in an orderly and guarded environment. In-depth research has been done on the details of European and American interior design, for example, a light environment with high illumination and high color temperature can improve the circadian rhythm of patients with Alzheimer's disease, and may have a positive impact on the patient's restless behavior. There is a lack of professional dementia nursing homes in China, and there are few separate dementia care units in ordinary nursing homes.

### **Significance:**

Before the social situation of caring for the aging become even more serious than it already is through the demographics of a growing elderly population, the research on the interior design of the public area of dementia in nursing homes was used to create a more suitable living environment for patients so that they can live with dignity at the end of their lives. At the same time, research on the interior design of public areas in nursing homes for dementia can promote the development of Chinese nursing institutions to better meet social needs.

### **Proposed research methodology and methods:**

Literature research  
Case analysis  
Analytical induction

### **Plan of Work:**

1. By studying the characteristics of patients with Alzheimer's disease, and consulting with

both medical and care home staff, I will summarize the spatial characteristics of patients with Alzheimer's disease.

2. Conduct surveys and interviews on the site selection, indoor environment, architectural layout, and supporting facilities of relevant existing nursing homes, analyze the results of the survey, and summarize the current problems of nursing homes in China in caring for patients with Alzheimer's disease.

3. Aiming at the problems found in the above summary, I will put forward feasible design suggestions from the interior design level.

4. According to the proposed design suggestions, I will carry out the simulation design of the indoor public space for Alzheimer's disease, looking at several variations, and explore whether these designs are feasible.

### **Outcome:**

According to the content of the research, the public space needed by the patients is summarized and designed, and the research content is finally explained in combination with the design results.

### **Ethical Issues:**

While this is a preliminary proposal, I know that I will need to undertake ethical training, research integrity training, and training specific to interviews (with medical experts, care home staff, and possible even families of Alzheimer's sufferers. In time as a PhD research student, will learn how to store any notes about patients anonymously, seek the expertise of Professor Graham Pullin and others concerning design thinking and planning; working with clients to understand special needs before briefs are generated; and then work with IED academics to develop techniques for ethical critiques of my projects.

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